-7- (Amended)

A mesostructured crystalline transition alumina composition selected from the group consisting of gamma alumina, boehmite, and mixtures thereof and:

A3

wherein the composition exhibits at least one low angle x-ray diffraction line corresponding to a lattice spacing of at least 2.0 nm and multiple wide angle x-ray diffraction lines with CuKα radiation where λ is 0.1541 nm corresponding to an ordered oxygen atom lattice with aluminum in interstitial positions within the lattice, wherein the surface area is at least 200 m^2/g; and wherein the pore volume is at least 0.40 cm^3/g.

-8- (Amended)

The mesostructured transition alumina of Claim 7 wherein the transition alumina comprises gamma alumina.

Sub B1

REMARKS

Claims 1 to 8 are pending. No claims are allowed.

The Applicants affirm the election of the invention of Claims 1 to 8 for prosecution in this application. The election is without traverse.

Claims 4 to 6 and 8 were rejected under 35 USC 112, second paragraph, as being indefinite. The claims have been corrected as noted. Reconsideration is requested.

Claims 1, 2-5 and 8 were rejected under 35 USC 103(a) as being unpatentable over Valange et al. Claims 1, 2-5 and 8 and 1 to 8 were also rejected under 35 USC 103(a) as being unpatentable over two references, Gonzalez-Pena et al. Finally Claims 1 to 8 were rejected under 35 USC 103(a) as being unpatentable over Pinnavaia '706. In the Office Action it was stated that proof was required to show the differences of the composition of the references from the claimed composition.

Enclosed is a Declaration Under 37 CFR 1.132 which contains experiments which clearly show that the references do not describe the presently claimed compositions for the reasons set forth therein. It is thus believed that Applicants have met their burden of proof as to the unobviousness of the claimed invention. The claims have been amended to call for the compositions of the Examples in the present application. Reconsideration is requested.

Attached hereto is a marked-up version of the changes made to the claims by the current Amendment. The attachment is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**."

It is now believed that Claims 1 to 8 are in condition for allowance. Notice of Allowance is requested.

Respectfully,

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Enclosure: Declaration under 37 CFR 1.132

"**VERSION WITH MARKINGS TO SHOW CHANGES MADE**"

In the Specification

Page 21, line 13, change "cm^3/g" to --m^2/g-.

The paragraph beginning on page 20, line 19 and ending on page 22, line 5, has been amended as follows:

-The second principal embodiment of this invention is directed at mesostructured forms of transition aluminas. The structural properties of these compositions parallel those described above for mesostructured boehmite, except that the aluminum oxide comprising the mesostructured network is an atomically ordered transition alumina. Thus, the mesostructured transition aluminas of this invention exhibit a low angle x-ray diffraction peak corresponding to a lattice spacing of at least 2.0 nm and wide angle diffraction peaks characteristic of an atomically ordered transition alumina. These mesostructured transition aluminas have surface areas and pore volumes that are substantially larger than conventional transition aluminas. For example, commercial grades of transition aluminas have only textural porosity and lack the ordered mesoscopic network structure of the present convention. Typical surface areas and pore volumes for these commercial grades of transition aluminas, including the most commonly used gamma-alumina, are in the range 200 - 250 m^2/g and 0.35 - 0.50 cm^3/g. In contrast, the mesostructured transition aluminas of this invention, which we denote as MSU-γ, typically have surface areas

beyond the 200 - 250 [cm^3/g] <u>m^2/g</u> range and pore sizes well beyond 0.50 cm^3/g. These large surface areas and pore volumes make the mesostructured MSU-γ alumina and other transition aluminas of this invention particularly attractive as catalysts and catalyst support. Gamma-alumina, for instance, is widely used as a catalyst component in petroleum refining. This oxide, in combination with clay, meta-kaolin, zeolites, and other oxides, comprises an important active ingredient in commercial petroleum cracking catalysts. The mesostructured gamma-alumina of this invention is expected to be an even better petroleum refining catalyst component, owing primarily to the higher available surface areas and pore volumes. In addition to being an improved ingredient for the fluidized catalytic cracking and hydrocracking of petroleum, the mesostructured transition aluminas of this invention also should be useful catalyst components for many other chemical conversions, including the hydrodesulfurization of petroleum, the steam reforming of hydrocarbons, ammonia synthesis, and many other heterogeneous catalytic processes.

<u>In the Claims</u>

Claims 1, 3, 4, 5, 6, 7 and 8 have been amended as follows:

-1-(Amended)

A mesostructured crystalline hydrated alumina composition selected from the group consisting of gamma alumina, boehmite, and mixtures thereof and exhibiting at least one low angle x-ray diffraction line corresponding to a lattice spacing of at least 2.0 nm and multiple wide angle x-ray diffraction lines with CuKα radiation wherein λ is 0.1541 nm corresponding to an ordered lattice comprised of oxygen atoms and hydroxide groups with aluminum in interstitial positions within the lattice, wherein the surface area is at least 200 m^2/g; and wherein the pore volume is at least 0.40 cm^3/g.

-3-(Amended)

A mesostructured crystalline hydrated alumina and organic modifier composite composition wherein the alumina composition is selected from the group consisting of gamma alumina, boehmite, and mixtures thereof and exhibits at least one low angle x-ray diffraction line corresponding to a lattice spacing of at least 2.0 nm and multiple wide angle x-ray diffraction lines corresponding to an ordered lattice comprised of oxygen atoms and hydroxide groups with aluminum in interstitial positions within the lattice.

-4-(Amended)

The [hydrated alumina and organic modifier composite] composition of Claim 3 wherein the organic modifier component is a non-ionic surfactant.

-5-(Amended)

The composition of Claim 4 wherein the surfactant is selected from the group consisting of a polyethylene oxide block co-polymer, an alkylene amine; an alkylene polyamine, a polypropylene oxide amine, [and] a polypropylene oxide polyamine and mixtures thereof.

-6-(Amended)

The composition of <u>any one of</u> Claims 3, 4 <u>or</u> [and] 5 wherein the hydrated alumina component is [selected from the group consisting of] boehmite[, pseudoboehmite and mixtures thereof].

-7-(Amended)

A mesostructured crystalline transition alumina composition selected from the group consisting of gamma alumina, boehmite, and mixtures thereof and:

wherein the composition exhibits at least one low angle x-ray diffraction line corresponding to a lattice spacing of at least 2.0 nm and multiple wide angle x-ray diffraction lines with CuKα radiation where λ is 0.1541 nm corresponding to an ordered oxygen atom lattice with aluminum in interstitial positions within the lattice, wherein the surface area is at least 200 m^2/g; and wherein the pore volume is at least 0.40 cm^3/g.

-8-(Amended)

The mesostructured transition alumina of Claim 7 wherein the transition alumina comprises [is selected from the group consisting of] gamma alumina[, delta, theta, *eta, chi, and rho* alumina and mixtures thereof].